Amendments to the Claims:

This listing of claims will replace all prior versions of claims in the application:

1. (currently amended) An isolated or recombinant nucleic acid encoding menin, wherein said nucleic acid encodes a protein comprising an amino acid sequence having at least 95% identity to SEQ ID NO:2 ~~defined as follows:~~

~~(i) having a calculated molecular weight of about 67.5 kDa; and~~

~~(ii) having at least 60% amino acid sequence identity to a protein with a sequence as set forth in SEQ ID NO:2;~~

~~wherein the isolated nucleic acid sequence specifically hybridizes to SEQ ID NO:1 under hybridization conditions comprising 50% formamide at 42°C and stringent wash conditions comprising 0.2XSSC at 65°C for 15 minutes~~.

2. (original) The isolated or recombinant nucleic acid of claim 1, which further comprises non-coding sequence.

3. (original) The isolated or recombinant nucleic acid of claim 2, wherein the non-coding sequence comprises introns.

4. (currently amended) The isolated or recombinant nucleic acid of claim 3, wherein the sequence ~~is~~ comprises SEQ ID NO:3.

5. (currently amended) The isolated or recombinant nucleic acid of claim 1, wherein the nucleic acid sequence encodes a protein having ~~at least 80% amino acid sequence identity to a protein with a~~ the sequence as set forth in SEQ ID NO:2.

6. (previously presented) The isolated or recombinant nucleic acid of claim 1, wherein the nucleic acid sequence encodes a menin protein that binds to an antibody raised against a polypeptide having an amino acid sequence as set forth in SEQ ID NO:2.

Claim 7-13 cancelled

14. (withdrawn) A method for detecting the presence of menin in a human cell or tissue, said method comprising:

(i) isolating a biological sample from a human being tested for menin;

(ii) contacting the biological sample with a menin specific reagent; and,

(iii) detecting the level of menin specific reagent that selectively associates with the sample.

15. (withdrawn) The method of claim 14, wherein the menin specific reagent is selected from the group comprising: menin specific antibodies, MEN1 amplification primers and nucleic acid probes which selectively bind to MEN1.

16. (withdrawn The method of claim 14, wherein the contacting step uses a menin specific antibody.

17. (withdrawn) The method of claim 14, wherein the human from which the sample is isolated is suspected of being at risk from multiple endocrine neoplasia type 1.

18. (withdrawn) The method of claim 14, wherein the contacting step uses a MEN1 specific PCR primer pair that amplifies a region of the MEN1 gene in which a mutation has been associated with multiple endocrine neoplasia type 1.

19. (previously presented) A method for detecting in a test sample the presence or absence of a mutation in a human MEN1 gene comprising a nucleotide sequence that encodes a human menin as set forth in SEQ ID NO:2 , or the presence or absence of a MEN1 allele, the method comprising:

a) contacting said test sample suspected of missing a MEN1 allele or encoding a mutant form of the human menin with a first oligonucleotide having a sequence that discriminates between the wild type gene and the missing allele or mutant form; and,

b) detecting the formation of a duplex between the gene and the first oligonucleotide sequence.

20. (previously presented) A method of claim 19, wherein the first oligonucleotide is unable to bind to the wild-type MEN1 gene under hybridization conditions in which the first oligonucleotide binds to the mutant sequence of MEN1.

21. (original) A method of claim 19, wherein the contacting step further comprises amplifying a portion of the human MEN1 gene and where the first nucleic acid is a polymerase chain reaction amplification primer which binds to an intron of MEN1.

22. (original) A method of claim 19, wherein the contacting step further comprises amplifying a portion of MEN1 and where the first nucleic acid is a polymerase chain reaction amplification primer which discriminates between wild-type and mutant forms of MEN1 using allelic specific polymerase chain reaction.

23. (original) A method of claim 19, wherein the first nucleic acid binds to either exons or introns of the genomic DNA encoding the human menin gene.

24. (previously presented) A kit for detecting in a test sample the presence or absence of a mutation in a MEN1 gene comprising a nucleotide sequence encoding a menin polypeptide as set forth in SEQ ID NO:2, the kit comprising;

a) a container holding a first oligonucleotide sequence that discriminates between the wild type gene and the mutant form; and

b) a container holding a reagent for detecting the formation of a duplex between the gene and the first nucleotide sequence.

25. cancelled

26. (previously presented) The kit of claim 24, further comprising amplification primer pairs specifically binding to a human genomic DNA sequence encoding menin.

Claims 27-29 cancelled

30. (previously presented) A transfected cell comprising a heterologous nucleic acid of claim 1.

31. cancelled

32. (previously presented) The transfected cell of claim 30, wherein the heterologous or exogenous nucleic acid comprises a nucleic acid as set forth in SEQ ID NO:1 or SEQ ID NO:3.

33. (previously presented) The transfected cell of claim 30, wherein the cell is a human cell.

34. (withdrawn) An organism into which an exogenous nucleic acid sequence has been introduced, the exogenous nucleic acid specifically hybridizing under stringent conditions to a nucleic acid with:

a sequence as set forth in SEQ ID NO:1; or,

a nucleic acid encoding a protein defined as having a calculated molecular weight of about 67.5 kDa; and (a) specifically binding to an antibody raised against an protein with a sequence as set forth in SEQ ID NO:2; or (b) having at least 60% amino acid sequence identity to a protein with a sequence as set forth in SEQ ID NO:2; and,

the organism expresses the exogenous nucleic acid as a menin protein.

35. (withdrawn) The organism of claim 34, wherein the exogenous nucleic acid comprises the nucleic acid as set forth in SEQ ID NO:1 or SEQ ID NO:3.

36. (previously presented) An expression cassette comprising a nucleic acid of claim 1, wherein the nucleic acid is operably linked to a promoter.

37. (original) The expression cassette of claim 36, further comprising an expression vector.

Claims 38-42 (cancelled)